

# PATENT COOPERATION TREATY

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### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>PA/LGE/03925</b>	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. <b>PCT/KR 2003/002419</b>	International filing date ( <i>day/month/year</i> ) <b>11 November 2003 (11.11.2003)</b>	Priority Date ( <i>day/month/year</i> )
International Patent Classification (IPC) or national classification and IPC  <b>IPC<sup>8</sup>: F04B 35/04 (2006.01); F04B 49/06 (2006.01); F25B 1/02 (2006.01)</b>		
Applicant <b>LG ELECTRONICS INC.</b>		

1. This international preliminary examination report has been prepared by this International Preliminary Examination Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of \_\_\_\_\_ sheets.

3. This report contains indications relating to the following items:

- I. ☒ Basis of the opinion
- II. ☐ Priority
- III. ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV. ☐ Lack of unity of invention
- V. ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI. ☐ Certain documents cited
- VII. ☐ Certain defects in the international application
- VIII. ☐ Certain observations on the international application

Date of submission of the demand  <b>13.05.2005</b>	Date of completion of this report  <b>24 January 2006 (24.01.2006)</b>
Name and mailing address of the IPEA/AT Austrian Patent Office Dresdner Straße 87 A-1200 Vienna Facsimile No. 1/53424/200	Authorized officer  <b>RIEDER W.</b>  Telephone No. 1/53424/366

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/KR 2003/002419

**I. Basis of the report**

## 1. With regard to the elements of the international application:\*

☒ the international application as originally filed☐ the description:

pages \_\_\_\_\_, as originally filed

pages \_\_\_\_\_, filed with the demand

pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_.

☐ the claims:

pages \_\_\_\_\_, as originally filed

pages \_\_\_\_\_, as amended (together with any statement) under Article 19

pages \_\_\_\_\_, filed with the demand

pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_.

☐ the drawings:

pages \_\_\_\_\_, as originally filed

pages \_\_\_\_\_, filed with the demand

pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_.

☐ the sequence listing part of the description:

pages \_\_\_\_\_, as originally filed

pages \_\_\_\_\_, filed with the demand

pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_.

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).☐ the language of publication of the international application (under Rule 48.3(b)).☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:☐ contained in the international application in printed form.☐ filed together with the international application in computer readable form.☐ furnished subsequently to this Authority in written form.☐ furnished subsequently to this Authority in computer readable form.☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.4. ☐ The amendments have resulted in the cancellation of:☐ the description, pages \_\_\_\_\_.☐ the claims, Nos. \_\_\_\_\_.☐ the drawings, sheets/fig \_\_\_\_\_.5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as „originally filed“ and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

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## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement			
Novelty (N)	Claims	1-13	YES
	Claims	----	NO
Inventive step (IS)	Claims	1-13	YES
	Claims	----	NO
Industrial applicability (IA)	Claims	1-13	YES
	Claims	----	NO

### Citations and explanations (Rule 70.7)

The following documents have been cited in the Search Report:

D1: WO 2001/054253 A1  
D2: US 2003/0177773 A1  
D3: US 6527519 B2  
D4: US 2003/0026702 A1

The object of D1 is to provide a device and a method for controlling a piston position in a linear compressor, in which a piston position in a cylinder is controlled for minimizing a top clearance.

D2 discloses an operation control method of a linear compressor in which when an initial power input is sensed by sensing an inner temperature of a refrigerator, a stroke voltage of a linear compressor is controlled to be lower than a general operation control state, whereas if a temperature sensed by a defrosting sensor is below a pre-set temperature, the linear compressor is operated with a normal stroke voltage, thereby suitably controlling the inner temperature of the refrigerator and obtaining a reliability in case of an overload by preventing collision between a piston and a discharge valve.

D3 illustrates an apparatus and a method for controlling a linear compressor which are capable of detecting accurately a load having a non-linearity characteristics and controlling a linear compressor so as to operate in a safe region by inducing suction/discharge pressure difference.

D4 relates to a stroke control apparatus of a reciprocating compressor and a method thereof, and in particular to a stroke control apparatus of a reciprocating compressor and a method thereof which are capable of improving an operational efficiency of a reciprocating compressor by detecting a phase difference between a stroke and a current and varying an operational frequency so as to make an operation distance of a stroke place near TDC (=top dead centre)=0 in every load variation.

**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**

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**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Box V (page 1)

The object of the present subject-matter is to provide a driving controlling apparatus of a linear compressor capable of preventing a power consumption decrease and a refrigerating phenomenon and capable of enhancing a reliability at the time of a compressor driving by variably controlling a stroke at the time of compression processing and a suction processing according to a load state and a method thereof.

None of the cited documents - alone or in combination - shows all the features of the subject-matter of the present claims 1, 7 and 9. Therefore, said claims are novel in the sense of Article 33 (2) PCT and meet the requirements of Article 33(3) PCT with respect to inventive step.

The dependent claims 2-6, 8 and 10 to 13 are novel and involve an inventive step, too.

Industrial applicability is given.